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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/530,379

04/06/2005

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08/21/2009

PHILIPS INTELLECTUAL PROPERTY & STANDARDS

P.O. BOX 3001

BRIARCLIFF MANOR, NY 10510

EXAMINER

CHOWDHURY, AFROZA Y

ART UNIT

PAPER NUMBER

2629

MAIL DATE

DELIVERY MODE

08/21/2009

PAPER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GUOFU ZHOU,
WILLIBRORDUS DIJKMAN, and MARK JOHNSON

Appeal 2009-003723
Application 10/530,379
Technology Center 2600

Decided: August 21, 2009

Before KENNETH W. HAIRSTON, CARLA M. KRIVAK,
and ELENI MANTIS MERCADER, *Administrative Patent Judges*.

MANTIS MERCADER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants seek our review under 35 U.S.C. § 134(a) of the Examiner's final rejection of claims 1-19. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

INVENTION

Appellants' claimed invention is directed to an electrophoretic panel display able to display an estimate of a subsequent picture, as a consequence of the pixels having inter-picture appearances (i.e., light gray and dark gray, which are gray levels between the extreme appearances of white and black) (Spec. 2:3-5; 4:4-9). Thus, an observer perceives a relatively smooth transition from the picture via the estimate of the subsequent picture to the subsequent picture (Spec. 2:5-6). The display panel is able to display the estimate of the subsequent picture because the drive means is able to control, for each pixel, an estimate potential difference as an inter-picture value to provide the pixels with a respective estimate picture appearance as the inter-picture appearance (Spec. 2:6-9).

Claim 1, reproduced below, is representative of the subject matter on appeal:

1. An electrophoretic display panel for displaying a picture and a subsequent picture comprising:
 - a first and a second opposed substrate;
 - an electrophoretic medium between the substrates;
 - a plurality of pixels;
 - a first and a second electrode associated with each pixel for receiving a potential difference; and
 - a driver;

the electrophoretic medium being able to provide each pixel with an appearance, being one of a first and a second extreme appearance and intermediate appearances between the first and the second extreme appearance, and
the driver being able to control for each pixel the potential difference to a picture value that provides the pixel with a respective picture appearance being one of the appearances in dependence of the picture to be displayed, subsequently
to an inter-picture value that provides the pixel with a respective inter-picture appearance, and subsequently
to a subsequent picture value that provides the pixel with a respective subsequent picture appearance being one of the appearances in dependence of the subsequent picture to be displayed, wherein
the driver is able to control for each pixel an estimate potential difference as the inter-picture value that provides the pixels with a respective estimate picture appearance as the inter-picture appearance.

THE REJECTIONS

The Examiner relies upon the following as evidence of unpatentability:

Webber US 2002/0180687 A1 Dec. 5, 2002

The following rejections are before us for review:

1. The Examiner rejected claims 7 and 14 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter.¹
2. The Examiner rejected claims 13-19 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

¹ It is herein noted that this rejection has not been included in the claims rejection section of the Answer. Nonetheless, we address the rejection.

3. The Examiner rejected claims 1-19 under 35 U.S.C. § 102(e) as being anticipated by Webber.

Appellants argue the art rejection of claims 6, 9, and 10 as a group with independent claims 6 and 9 as representative (App. Br. 7-11).² Accordingly, claim 10, stands or falls with claims 6 and 9. *See* 37 C.F.R. § 41.37 (c)(1)(vii) (2004).

REJECTION UNDER 35 U.S.C. § 112, SECOND PARAGRAPH ISSUE

Rejection of claims 7 and 14

The Examiner asserts that the claim language of “the inter-picture values are subsequently equal to one of a set of extreme image values” is not clear (Final Rej. 4). The Examiner questions how the inter-picture value can be the same as the extreme image value (Final Rej. 4).

Appellants respond that based on the disclosure of page 3, line 32 - page 4, line 8, one skilled in the art would know how it is possible for the inter-values to be equal to one of these extreme image values to provide a corresponding extreme appearance (Br. 8).

The issue, then, is whether Appellants have shown that the Examiner erred in finding that the limitation of “the inter-picture values are substantially equal to one of a set of extreme image values” is not clear in view of Appellants’ Specification.

² Only arguments made by Appellants have been considered in this decision. Arguments which Appellants could have made but did not make in the Brief have not been considered and are deemed waived. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2004).

FINDINGS OF FACT

The following relevant Findings of Fact (FF) are supported by a preponderance of the evidence:

1. Claims 7 and 14 recite the limitation of “the inter-picture values are each *substantially equal* to one of a set of extreme image values” (emphasis added).
2. Appellants’ Specification describes the first and second extreme appearances of each pixel as white and black, respectively (Spec.: 2:22-23).
3. Appellants’ Specification further describes that the pixels are provided with a respective inter-picture appearance “*substantially equal to white*” if the respective subsequent picture appearance is “*optically closer to white*” than to black, and “*substantially equal to black*” otherwise (Spec.: 2:23-25).
4. Appellants’ Specification states that “the estimate of the subsequent picture is being displayed by only substantially black and substantially white pixels, thereby being an estimate of the subsequent picture” (Spec.: 2:25-27).

PRINCIPLES OF LAW

An application fails to comply with the second requirement of 35 U.S.C. 112, second paragraph when the claims do not set out and define the invention with a reasonable degree of precision and particularity. In this regard, the definiteness of the language must be analyzed, not in a vacuum, but always *in light of the teachings of the disclosure as it would be interpreted by one of ordinary skill in the art*. Applicant’s claims, interpreted

in light of the disclosure, must reasonably apprise a person of ordinary skill in the art of the invention.

MPEP § 2106 (V)(A) (2008) (emphasis added).

ANALYSIS

Rejection of claims 7 and 14

Initially we note that claims 7 and 14 recite the limitation of “the inter-picture values are each *substantially equal* to one of a set of extreme image values” (emphasis added) (FF 1). This is contrary to the Examiner’s assertion (Final Rej. 4) that the claim language recites: “the inter-picture values are *subsequently equal* to one of a set of extreme image values” (emphasis added). Thus, clearly the claim language does not recite that the inter-picture values *are equal* to the extreme image values, but rather, are *substantially equal*.

Appellants’ Specification describes the first and second extreme appearances of each pixel as white and black, respectively (FF 2). The Specification further describes that the pixels are provided with a respective inter-picture appearance “*substantially equal to white*” if the respective subsequent picture appearance is “*optically closer to white*” than to black, and “*substantially equal to black*” otherwise (FF 3). As a result, “the estimate of the subsequent picture is being displayed by only substantially black and substantially white pixels, thereby being an estimate of the subsequent picture” (FF 4).

In light of the teachings of the disclosure as it would be interpreted by one of ordinary skill in the art, claims 7 and 14 do in fact describe that when the inter-picture values are “*substantially equal*” to white the subsequent picture appearance

is optically closer to white, whereas, when the inter-picture values are “*substantially equal*” to black the subsequent picture appearance is optically closer to black (emphasis added). *See* MPEP § 2106 (V)(A) (2008)

For the foregoing reasons, Appellants have persuaded us that the Examiner erred in rejecting claims 7 and 14.

CONCLUSION

Under 35 U.S.C. § 112, second, Appellants have shown that the Examiner erred by finding that the limitation of “the inter-picture values are substantially equal to one of a set of extreme image values” is not clear in view of Appellants’ Specification. Thus, the Examiner’s rejection of claims 7 and 14 is not sustained under 35 U.S.C. § 112, second paragraph.

REJECTION UNDER 35 U.S.C. § 112, FIRST PARAGRAPH ISSUE

Rejection of claims 13-19

The Examiner asserts that the Specification does not describe a controller that is configured to receive a first picture value of a first picture and a second picture value of a subsequent picture as recited in claim 13 (Ans. 10). The Examiner further states that the driver 100 is not the same as a controller and that a driver “drives the display” whereas a controller “controls the display” (Ans. 11).

Appellants respond that the Specification on page 4, lines 9-20, discloses that “drive means 100 are able to control for each pixel” which corresponds to

teaching a controller; a “picture value” which corresponds to a first picture value; and a “subsequent picture value” which corresponds to teaching a second picture value as claimed (Br. 7).

The issue, then, is whether Appellants have shown that the Examiner erred in finding that the limitation of “a controller” is not supported by the Specification.

FINDINGS OF FACT

The following relevant Findings of Fact (FF) are supported by a preponderance of the evidence:

5. Appellants’ Specification recites “[t]he drive means 100 are *able to control* for each pixel 2 the potential difference to have a picture value . . .” (Spec. 4:9) (emphasis added).
6. The Examiner acknowledges that a driver “drives the display” whereas a controller “controls the display” (Ans. 11).

PRINCIPLES OF LAW

Under the written description portion of the first paragraph of 35 U.S.C. § 112, the Applicants must convey with reasonable clarity to those skilled in the art that they had possession of the invention as of the filing date sought. *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991); *In re Kaslow*, 707 F.2d 1366, 1375 (Fed. Cir. 1983).

ANALYSIS

Rejection of claims 13-19

Appellants' Specification recites "[t]he drive means 100 are *able to control* for each pixel 2 the potential difference to have a picture value" (FF 5) (emphasis added). As acknowledged by the Examiner a driver "drives the display" whereas a controller "controls the display" (FF 6). Thus, since there is disclosure of ability to "control" each pixel's potential, then one skilled in the art would readily recognize that there is a controller in view of an artisan's understanding as acknowledged by the Examiner that the driver only drives the display. In other words, one skilled in the art would recognize that for an electrophoretic display to function there is necessarily a controller for controlling the display via a driver which drives the display.

For the foregoing reasons, Appellants have also persuaded us that the Examiner erred in rejecting claims 13-19.

CONCLUSION

Under 35 U.S.C. § 112, first, Appellants have shown that the Examiner erred by finding that the limitation of "a controller" is not supported by the Specification. Thus, the Examiner's rejection of claims 13-19 is not sustained under 35 U.S.C. § 112, first paragraph.

ANTICIPATION

Rejection of claims 1-5

With respect to claims 1, Appellants argue Webber fails to teach an electrophoretic display panel that includes a driver configured to control, for each pixel, an estimated potential difference of a pair of electrodes as the inter-picture value that provides the pixels with a respective estimate picture appearance as the inter-picture appearance (Br. 8). Appellants specifically argue that the Examiner's cited [0039], [0040], and [0052] paragraphs do not teach controlling an estimated potential difference of a pair of electrodes as the inter-picture value for each pixel (Br. 9).

Furthermore, with respect to claim 2, Appellants argue that Webber fails to teach the respective estimated picture appearance substantially equal to one of the extreme appearances associated with the subsequent picture appearance (Br. 10). Claims 3-5 fall with claim 2 from which they depend and which Appellants grouped with claim 1 (Br. 10).

The Examiner responds that it is inherent for Webber's display to have a driver in order to drive the display into a white and black color display (Ans. 11). The Examiner finds that the electrophoretic medium (Figs. 1A-3A, 1B-3B; ¶ [0036]) is able to provide each pixel with an appearance, being one of a first (Fig. 9; ¶ [0039]; i.e., white) and a second (Fig. 9; ¶ [0039]; i.e., black) extreme appearance and intermediate appearances (Fig. 9; ¶ [0089]; i.e., gray) between the first and the second extreme appearance (Ans. 9). Furthermore, the Examiner finds that Webber discloses an electrophoretic display where the front electrode 110 is positively charged relative to the rear electrode 112 in order to display white color

and the front electrode 110 is negatively charged relative to the rear electrode 112 in order to display black color (Figs. 1, 2, 3 (A,B), (+ potential) and (-potential); Fig. 9; ¶¶ [0039], [0043]) (Ans. 11-12). The potential difference between the two electrodes as the inter-picture value provides the pixels with a respective estimated picture appearance as the inter-picture appearance (white color and black color) (Figs. 1 A,B 2A,B, 3A,B 9; ¶¶ [0039], [0042]) (Ans. 12).

The issue, then, is whether Appellants have shown that the Examiner erred by finding that Webber teaches the limitation of: “the driver is able to control for each pixel an estimate potential difference as the inter-picture value that provides the pixels with a respective estimate picture appearance as the inter-picture appearance” as recited in claim 1; and the limitation of: “the respective estimate picture appearance is substantially equal to one of the extreme appearances associated with the subsequent appearance” as recited in claim 2.

FINDINGS OF FACT

The relevant facts include the following (FF):

7. Webber teaches applying, to the medium, electric pulses of reduced length and/or reduced voltage to provide an intermediate optical appearance of gray, rather than the extreme optical states of white or black (¶¶ [0052], [0089], [0090] and Fig. 9).
8. Webber also teaches that the pixels of the display can be “driven” to an intermediate gray state (¶ [0090]). Note that the display 100 is made of a plurality of pixels wherein each microcapsule as shown in Figures 1A and

1B constitutes a pixel defined by each of the rear electrodes 112 at the back of the display 100 (¶ [0036]).

9. Webber teaches that the appearance is changed by switching the polarity of the electrodes from positive to negative and vice versa to control the movement of particles 108 between the front and back electrodes (¶ [0039]).
10. Webber teaches that the display is driven to “*intermediate gray states*” by using a driving pulse (or reduced voltage as described in ¶ [0052]) when the display is driven to its black or white state (emphasis added) (¶¶ [0089]-[0090]; Fig. 9).

PRINCIPLES OF LAW

If the prior art reference does not expressly set forth a particular element of the claim, that reference still may anticipate if that element is ‘inherent’ in its disclosure. To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.’

In re Robertson, 169 F.3d 743, 745 (Fed. Cir. 1999) (internal citations omitted).

ANALYSIS

Rejection of claim 1

Webber teaches applying to the medium electric pulses of reduced length and/or reduced voltage to provide an intermediate optical appearance of gray, rather than the extreme optical states of white or black (FF 7). Thus, we do not

agree with Appellants that Webber does not control the picture appearance. Webber in fact teaches an inter-picture appearance pixel (i.e., gray pixel appearance) and an estimated potential difference as the inter-picture value (i.e., reduced voltage or a shorter pulse from that required to change the appearance of white to black and vice versa) that provides the pixels with a respective estimated picture appearance (i.e., gray) as the inter-picture appearance (i.e., gray) (FF 7). Webber also teaches that the pixels of the display can be “driven” to an intermediate gray state (FF 8). Furthermore, Webber teaches that the appearance is changed by switching the polarity of the electrodes from positive to negative and vice versa to control the movement of particles 108 between the front and back electrodes (FF 9). Thus, it is clear that Webber necessarily teaches a driver that “drives,” as disclosed, the display to an intermediate gray state. *See Robertson*, 169 F.3d at 745 (Fed. Cir. 1999).

Accordingly, Webber does teach the limitation of: “the driver is able to control for each pixel an estimate potential difference as the inter-picture value that provides the pixels with a respective estimate picture appearance as the inter-picture appearance” as recited in claim 1.

For the foregoing reasons, Appellants have not persuaded us that the Examiner erred in rejecting claim 1.

Rejection of claims 2-5

We are also not persuaded by Appellants’ argument (Br. 10) that Webber does not teach that the respective estimated picture appearance is substantially equal to one of the extreme appearances associated with the subsequent appearance. Webber teaches that the display is driven to “*intermediate gray*

states” by using a driving pulse or reduced voltage when the display is driven to its black or white state (emphasis added) (FF 10). Thus, these intermediate gray appearance states (i.e., estimated picture appearance of gray as the display is driven to the extreme appearance of black or white) are substantially equal to one of the extreme appearances (i.e., intermediate gray appearance is “substantially equal” to white or black) (FF 10). Note that this is consistent with Appellants’ Specification which describes that the pixels are provided with a respective inter-picture appearance “*substantially equal to white*” if the respective subsequent picture appearance is “*optically closer to white*” than to black, and “*substantially equal to black*” otherwise (FF 3). Accordingly an intermediate gray state is substantially equal to white if the subsequent picture appearance is the extreme appearance of white.

For the foregoing reasons, Appellants have not persuaded us that the Examiner erred in rejecting claim 2 and dependent claims 3-5 which fall with claim 2 (Br. 10).

Rejection of claims 6-19

Appellants again argue that Webber does not teach applying a sequence of potential differences across electrodes of pixels that include potential differences corresponding to the inter-picture values (Br. 11).

The Examiner essentially repeats the same findings as stated *supra* (Ans. 13).

We do not find Appellants’ argument persuasive for the same reasons as stated *supra* for claim 1 (FF 7-9).

For the foregoing reasons, Appellants have not persuaded us that the

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Examiner erred in rejecting claims 6-19.

CONCLUSIONS

Under 35 U.S.C. § 102, Appellants have not shown that the Examiner erred by finding that Webber teaches the limitation of: “the driver is able to control for each pixel an estimate potential difference as the inter-picture value that provides the pixels with a respective estimate picture appearance as the inter-picture appearance” as recited in claim 1; and the limitation of: “the respective estimate picture appearance is substantially equal to one of the extreme appearances associated with the subsequent appearance” as recited in claim 2. Claims 3-5 fall with claim 2 from which they depend.

Appellants have also not shown that the Examiner erred in rejecting claims 6-19 for the same reasons as those articulated for claim 1.

ORDER

The decision of the Examiner to reject claims 7 and 14 under 35 U.S.C. § 112, second, is reversed.

The decision of the Examiner to reject claims 13-19 under 35 U.S.C. § 112, first, is reversed.

The decision of the Examiner to reject claims 1-19 under 35 U.S.C. § 102, is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

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AFFIRMED

ELD

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